



Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2019-02-28-79 Date: 30-05-18
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Address : Shettyhalli Sub Division, BBMP, Bangalore.
Project Name : Maintanance of UGD in Ward No.12 Shettyhalli Sub-Division.
Agency : M/s Mahendra Enginnering Works (Prop. G Venkatesh), No. 243, 15th D Cross, 2nd Stage, 2nd Phase West of Chord Road, Mahalakshimpuram, Bengaluru-560086.
Customer's Reference : EE/DD/WO/04/18-19
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 28-05-18
Sample Type : Birla Super 53grade
Reference to BIS codes : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 (Part 1,2,3,4,5, 6,11):1988
IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4
IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5
IS 4031 Part 3, Determination of Soundness, Clause 5, Clause 6
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5
IS 4031 Part 11, DETERMINATION OF DENSITY , Clause 6
Date of test : 28-05-18
Environmental Conditions during test : Temperature: 26°C
Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	1.79	—
2	Finess by Air permeablity method (m ² /kg,Min)	295.9	225m ² /kg, Min
3	Density (gm/cc)	3.15	—
4	Standard Consistency (%)	28.5%	Not specified
5	Initial Setting time	145 minutes	Not less than 30 minutes
6	Final Setting time	255 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.0mm	Not more than 10 mm

Note:

The results pertain to the samples received and tested
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Samples will be disposed after 90 days from the date of issue of test certificate

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R KARTHIK RECHAN

Authorized Signatory
Quality Manager

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TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2019-02-28-79 Date: 31-05-18
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Address : Shettyhalli Sub Division, BBMP, Bangalore.
Project Name : Maintanance of UGD in Ward No.12 Shettyhalli Sub-Division.
Agency : M/s Mahendra Enginnering Works (Prop. G Venkatesh), No. 243, 15th D Cross, 2nd Stage, 2nd Phase West of Chord Road, Mahalakshmiapuram, Bengaluru-560086.
Customer's Reference : EE/DD/WO/04/18-19
Source of Sample : Sample supplied by Agency
Sample condition : Satisfactory
Date of Receipt : 28-05-18
Sample Type : 40mm down size coarse aggregate
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1,3,4) RA2011
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption
IS 2386 Part 4: Mechanical Properties
Date of test : 28-05-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	178	178	1.2	98.8	90-100
3	20 mm	7145	7323	48.8	51.2	30-70
4	10 mm	5699	13022	86.8	13.2	10-35
5	4.75 mm	1705	14727	98.2	1.8	0-5
6	Pan	273	15000	100.0	0	---



TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2019-02-28-79 Date: 30-05-18
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Address : Shettyhalli Sub Division, BBMP, Bangalore.
Project Name : Maintanance of UGD in Ward No.12 Shettyhalli Sub-Division.
Agency : M/s Mahendra Enginnering Works (Prop. G Venkatesh), No. 243, 15th D Cross, 2nd Stage, 2nd Phase West of Chord Road, Mahalakshmpuram, Bengaluru-560086.
Customer Reference : EE/DD/WO/04/18-19
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 28-05-18
Sample Type/ Size : 20mm down size coarse aggregate
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1,3,4) RA2011
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption
IS 2386 Part 4: Mechanical Properties
Date of test : 28-05-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	208	208	4.2	95.8	90-100
3	10 mm	2787	2995	59.9	40.1	25-55
4	4.75 mm	1804	4799	96.0	4.0	0-10
5	Pan	201	5000	100	0	-



TEST REPORT ON COARSE AGGREGATES

Lab ID

: CP-2019-02-28-79

Date: 30-05-18

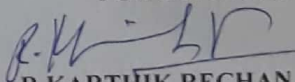
PHYSICAL PROPERTIES

SLno	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	9.7	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.5	
3	Specific Gravity	2.63	—
4	Bulk Density(Loose) (Kg/l)	1.45	—
5	Bulk Density(Compacted) (Kg/l)	1.51	—
6	Water Absorption(%)	0.23	—
7	Aggregate crushing Value(%)	23.8	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.7	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Authorized Signature
Quality Manager



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TEST REPORT OF FINE AGGREGATE

Lab ID : CP-2019-02-28-79 Date: 30-05-18 ✓
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Address : Shettyhalli Sub Division, BBMP, Bangalore.
Project Name : Maintanance of UGD in Ward No.12 Shettyhalli Sub-Division.
Agency : M/s Mahendra Enginnering Works (Prop. G Venkatesh), No. 243, 15th D Cross, 2nd Stage, 2nd Phase West of Chord Road, Mahalakshimpuram, Bengaluru-560086.
Customer's Reference : EE/DD/WO/04/18-19
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 28-05-18 ✓
Sample Type : Fine Aggregate
Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 : 1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption
Date of test : 28-05-18

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0 ✓	100	100	100	100
2	4.75 mm	21	21	2.1	97.9 ✓	90-100	90-100	90-100	95-100
3	2.36 mm	133	154	15.4	84.6 ✓	60-95	75-100	85-100	95-100
4	1.18 mm	179	333	33.3	66.7 ✓	30-70	55-90	75-100	90-100
5	600 micron	245	578	57.8	42.2 ✓	15-34	35-59	60-79	80-100
6	300 micron	182	760	76.0	24.0 ✓	5-20	8-30	12-40	15-50
7	150 micron	178	938	93.8	6.2 ✓	0-10	0-10	0-10	0-15
8	Pan	62	1000	100.0	0.0 ✓	---	---	---	---

Result : The tested Sample Conforms to Grading Zone II



TEST REPORT OF FINE AGGREGATE

Lab ID

: CP-2019-02-28-79

Date: 30-05-18

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.08	-
2	Specific Gravity	2.57	-
3	Material finer than 75 micron(%)	6.1	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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TEST REPORT OF PHYSICAL REQUIREMENTS OF BRICKS

Lab ID : CP-2019-02-28-79 Date: 11-06-19 ✓
Customer : Assistant Executive Engineer, Shettyhalli Sub Division, BBMP,
Bangalore.
Address : Shettyhalli Sub Division, BBMP, Bangalore.
Project Name : Maintanance of UGD in Ward No.12 Shettyhalli Sub-Division.
Agency : M/s Mahendra Enginnering Works (Prop. G Venkatesh), No. 243, 15th D
Cross, 2nd Stage, 2nd Phase West of Chord Road, Mahalakshmpuram,
Bengaluru-560086.
Customer's Reference : EE/DD/WO/04/18-19
Source of sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 04-06-19 ✓
Identification Mark on Brick : Wire Cut Brick ✓
Reference to BIS codes : IS 1077 : 1992(RA 2011) Common Burnt Clay Building Bricks-
Specification
IS 3495 (Part 1 to 3) : 1992(RA 2011)
Method of Tests Burnt Clay Building Bricks
Part 1:Determination of Compressive Strength, (Cl 4.2.3)
Part 2:Determination of Water Absorption,(Cl 4.1.3)
Part 3: Determination of Efflorescence, (Cl 4)
Date of test : 04-06-19

COMPRESSIVE STRENGTH

Sl.No.	Length (mm)	Breadth (mm)	Area (mm ²)	Failure Load (KN)	Compressive strength of individual bricks (N/mm ²)	Acceptability as per IS 1077:1992, Clause 7.1
1	228.13	109.98	25090	206.7	8.2	The bricks shall have a minimum average compressive strength for various classes as given in Table 1 of IS 1077:1992. The compressive strength of any individual bricks shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than 15%.
2	228.98	108.62	24872	197.6	7.9	
3	231.01	107.99	24947	201.3	8.1	
4	230.11	107.54	24746	199.5	8.1	
5	228.16	106.98	24409	194.6	8.0	
Average of 5 bricks					8.1	





Lab ID

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CP-2019-02-28-79

Date: 11-06-19

WATER ABSORPTION:

Sl.No.	Dry Weight	Wet Weight	Water Absorption(%)	Acceptability as per IS 1077:1992, Clause 7.2
1	2.975	3.265	9.7	The water Absorption of bricks shall not be more than 20% by weight upto class 12.5 and 15% by weight for higher classes.
2	2.868	3.176	10.7	
3	2.906	3.196	10.0	
4	2.976	3.275	10.0	
5	2.875	3.218	11.9	
Average Water Absorption(%)			10.5	

EFFLORESCENCE:

Sl.No.	Length (mm)	Breadth (mm)	Area (mm ²)	Efflorescence	Acceptability as per IS 1077:1992, Clause 7.3
1	229.18	108.98	24976	Slight	The efflorescence shall not be more than 'moderate' upto class 12.5 and 'slight' for higher classes.
2	228.98	109.18	25000	Moderate	
3	228.18	108.39	24732	Slight	
4	230.19	107.98	24856	Moderate	
5	228.13	109.19	24910	Slight	

DIMENSIONS AND TOLERANCES

Sl.No.	Dimensions obtained for 20 bricks(mm)		Acceptability as per IS 1077:1992, Clause 6.2(b)
1	Length	4610	4520 to 4680 mm
2	Width	2183	2160 to 2240 mm
3	Height	1400	1360 to 1440 mm

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